



**ENERGY STAR® Traffic Signals**  
**Draft Specification**  
**Version 1.0**  
**January 31, 2000**



The symbol for energy efficiency.

Below is the *initial draft* specification (*Version 1.0*) for ENERGY STAR Traffic Signals. In accordance with the requirements of the ENERGY STAR Program, a product must meet all of the identified criteria if it is to be qualified as ENERGY STAR compliant by its manufacturer.

This traffic signal specification is based on a low energy requirement and acceptance by the Institute for Transportation Engineers (ITE). At this time, only the LED technology meets such requirements and therefore the specification includes terms specific to LED traffic signals. However, EPA is open to any other technology that would qualify.

- 1) **Definitions:** Below is a brief description of an LED traffic signal and related terms as relevant to the ENERGY STAR Program.
  - A. **Highway Traffic Signal:** A power-operated illuminated traffic control device, other than a barricade warning light or a steady illuminated lamp, by which traffic is warned or directed to take some specific action.
  - B. **Modules** (referred to as “units” by many specifications, including the Cities of Philadelphia and Anaheim): Standard 8-inch (200 mm) or 12-inch (300 mm) round traffic signal indications. They consist of the light source and the lens (usually a sealed unit) that communicate movement messages (stop, caution or prepare to stop, and go) to drivers through red, yellow, and green colors. Arrow modules in the same colors are used to indicate turning movements. Pedestrian modules are used to convey movement information to pedestrians.
  - C. **Traffic signal head:** The combination of the traffic signal housing made of plastic or aluminum, with the modules (red, yellow, and green) installed in it. The head typically contains three modules and the necessary wiring, although it may also include arrow modules.
  - D. **LED lamps or LEDs:** The individual light-emitting diodes (LEDs), which can be set on a circuit board in any arrangement.
  - E. **LED traffic signal:** The generic term used to describe the combination of signal heads or modules that use LEDs as the source of light. The combination also incorporates the housing unit at an intersection along with any internal components and support structures.

***EPA Comments:** Above are brief descriptions of the common components of traffic signals, including LED traffic signals. To achieve the maximum energy savings without compromising product performance, the ENERGY STAR specification will focus on energy consumption and will rely on the Institute of Transportation Engineers (ITE) specification for LED Traffic Signals.*

*By federal statute, the design, placement, operation, and maintenance of all U.S. traffic control devices are required to be in conformance with the Manual of Uniform Traffic Control Devices (MUTCD). Published by the Federal Highway Administration, the MUTCD is the basis for all state and local manuals. In the MUTCD, the ITE specification for traffic signal indications is cited as the standard for optical/visual requirements. Hence, the ITE specification is the national standard.*

- 2) **Qualifying Products:** For the purposes of this Program, LED traffic signals include the following:
- A. **Vehicular Traffic Signals, including LED traffic signals:** All highway traffic signals designed for vehicular use, including those that use light emitting diodes as their light source, and meet the minimum performance requirements of the appropriate ITE specification for Vehicle Traffic Control Heads and this EPA specification.
  - B. **Pedestrian Signals, including LED pedestrian signals:** Highway traffic signals designed for pedestrian use, including those that use light emitting diodes as their light source, and meet the minimum performance requirements of the appropriate ITE pedestrian signal specification and this EPA specification.
- 3) **Efficiency Specifications for Qualifying Products:** Products listed in Section 2 that meet the specifications outlined in Table 1 below may qualify as ENERGY STAR compliant.

Table 1: **Draft** Criteria for ENERGY STAR<sup>®</sup>-compliant Traffic Signals (Version 1.0)

Product Category	Energy Use Under Test Conditions
Vehicular Traffic Signals	≤ 25 Watts for temperatures up to 165°F (74°C)
Pedestrian Signals	≤ 25 Watts for temperatures up to 165°F (74°C)

- a) **Test Criteria:** The products must meet the minimum performance requirements of the relevant ITE specification.

***EPA Comments:** Based on a technical review of existing products and discussions with manufacturers, EPA feels that the specifications listed above for traffic signals are reasonable and manufacturer neutral. EPA estimates that the above specifications constitute an average reduction in energy consumption of roughly 80%, yet they are flexible enough to allow ITE to address current concerns over luminance and light degradation. EPA recognizes that multiple models currently on the market meet the proposed specification. Testing conducted by/for EPA indicates the following:*

- *Within the above categories, there is a range in energy consumption among LED product models; however, they all consume significantly less than their incandescent counterparts.*

*Given the progress in LED technology and the range in efficiencies among the models, EPA justifies setting a standard based on currently available product models primarily because of the magnitude of energy savings over incandescent technology. EPA estimates that at this time the majority of energy savings opportunities arise from retrofitting red and green traffic signals, but EPA has designed a specification broad enough to include innovations in both vehicular and pedestrian signals.*

- 4) Other Information: The *final* version of the ENERGY STAR Traffic Signal specification will be provided in the standard Memorandum of Understanding (MOU) format (see text box below). In addition to the product specifications, other issues will be addressed such as the following.
- Buyer Information: In keeping with the spirit of the ENERGY STAR Program, the Partner will be expected to ensure that consumers have a quick and easy method of determining which of its products are ENERGY STAR compliant. To achieve this goal, EPA recommends that the Partner place the ENERGY STAR logo on all qualified product models, their packaging, and product-related materials such as brochures, manuals, advertisements, and Web sites. Further, to educate consumers about energy efficiency and its benefits, the Partner will provide one or more of the following: a description of the ENERGY STAR Program, a discussion of the energy-saving characteristics of the product, a description of the environmental benefits that result from the energy saved by the product, and/or a description of the potential energy-bill savings of the product. The Partner may determine the best manner to disseminate this information to customers.
  - Effective Date: The date that manufacturers may begin to qualify products as ENERGY STAR compliant will be defined as the *effective date* of the MOU. This date is subject to negotiation with industry.
  - Future Specification Revisions: EPA reserves the right to change the MOU requirements should technological and/or market changes affect its usefulness to consumers, industry, or the environment. Revisions to the MOU will be arrived at through industry discussions.

*EPA Comments: In order to focus EPA/industry discussions on the most crucial elements of the Program (i.e., the definitions and specifications), EPA has provided this brief draft specification as opposed to a complete MOU. However, the draft and final versions of the MOU will have all of the standard sections of an ENERGY STAR MOU, including “Common Agreements and Principles,” “Entry Into Force and Duration,” “Use of the ENERGY STAR Logo and Name,” and “Conflict Resolution.” As noted above, the product specification, effective date and the duration of the MOU will be negotiated with industry. As always, EPA welcomes comments or alternative proposals from industry that address these issues. EPA deems industry feedback crucial to the successful development of the ENERGY STAR Program.*